

# FACTSHEET

## *Veterinary Services*

United States  
Department of  
Agriculture

Animal and  
Plant Health  
Inspection  
Service

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## Venezuelan Equine Encephalomyelitis

Venezuelan equine encephalomyelitis (VEE) is a mosquito-borne viral disease of all equine species, such as horses, asses, and zebras. After infection, equines may suddenly die or show progressive central nervous system disorders. Humans also can contract this disease. Healthy adults who become infected by the virus may experience flulike symptoms, such as high fevers and headaches. People with weakened immune systems and the young and the elderly can become severely ill or die from this disease.

The highly pathogenic form of VEE has not occurred in the United States since 1971. However, in 1993 an outbreak of VEE in the State of Chiapas, Mexico, prompted the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS) to temporarily increase its surveillance activities and tighten its quarantine requirements for equine species entering the United States from Mexico.

### History

In 1936, VEE was first recognized as a disease of concern in Venezuela following a major outbreak of equine encephalomyelitis. From 1936 to 1968, equines in several South American countries suffered devastating outbreaks. In 1969, the disease moved north throughout Central America, finally reaching Mexico and Texas in 1971. Federal and State animal health officials, the U.S. military, and the affected communities took swift action to control this outbreak.

During the 1993 outbreak in southern Mexico, Mexican animal health officials effectively contained the disease by quarantining the affected area, surveying a widespread area for the disease, and promoting a vaccination campaign. As a precautionary measure, APHIS restricted the importation of Mexican equines and encouraged vaccination of all equines in the U.S. States bordering Mexico.

A more recent outbreak that began in northwestern Venezuela in April 1995 spread westward to the State of Guajira in Colombia. This outbreak is the largest in the region since 1971. A prolonged and heavy rainy season and the resulting increase in mosquito populations are believed to be largely responsible for this 1995 outbreak. Control measures instituted by Colombia include vaccination of equines in the affected areas, movement restriction of equines both between and within the affected areas, insecticide application, public education, community mobilization campaigns to eradicate mosquito breeding sites, and surveillance of humans and equines.

### Clinical Signs

Equines infected with VEE may show one or more of the following signs:

- Fever
- Depression
- Loss of appetite
- Weakness
- Central nervous system disorders (lack of coordination, chewing movements, head pressing, "sawhorse" stance, circling, paddling motion of the limbs, and convulsions).

In some cases, horses infected with VEE may show no clinical signs before dying.

### Confusion With Other Diseases

The clinical signs of VEE can be confused with those of other diseases that affect the central nervous system. These include eastern equine encephalitis, western equine encephalitis, African horse sickness, rabies, tetanus, and bacterial meningitis. VEE might also be mistaken for toxic poisoning. Definitive diagnosis can be made by isolating the virus in a laboratory or by testing blood for the presence of antibodies to the virus.

### How It Spreads

The virus that causes VEE is transmitted primarily by mosquitoes that bite an infected animal and then bite and feed on another animal or human. The speed with which the disease spreads depends

on the subtype of the VEE virus and the density of mosquito populations.

Enzootic subtypes of VEE are diseases endemic to certain areas. Generally these serotypes do not spread to other localities. Enzootic subtypes are associated with the rodent–mosquito transmission cycle. These forms of the virus can cause human illness but generally do not affect equine health.

Epizootic subtypes, on the other hand, can spread rapidly through large populations. These forms of the virus are highly pathogenic to equines and can also affect human health. Equines, rather than rodents, are the primary animal species that carry and spread the disease. Infected equines develop an enormous quantity of virus in their circulatory system. When a blood-feeding insect feeds on such animals, it picks up this virus and transmits it to other animals or humans. Although other animals, such as cattle, swine, and dogs, can become infected, they generally do not show signs of the disease or contribute to its spread.

## **Control Measures**

During outbreaks, the most effective way to prevent further spread of disease is to quarantine infected equines. Controlling mosquito populations through pesticide treatments and eliminating insect-breeding sites will also enhance disease control. These measures should be accompanied by a large-scale equine immunization program. Equines in the United States should be vaccinated for VEE only when there is a serious threat that the disease could spread to this country.

## **Report Suspicious Signs**

Owners of equines have an essential role in preventing VEE from spreading. They should immediately report to a veterinarian or to State or Federal animal health officials any animals showing signs suspicious of VEE.

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